

## HOW TO USE THIS PACKET

This packet has been designed to include questions that are not frequently found in typical Amusement Park Physics packets. We have designed the packet this way for several reasons:

- (1) We feel a teacher can rotate questions from year to year and possibly have new questions for at least 3 years. In this way, a teacher has the option of including new questions each year. As a consequence, there are questions in this packet you may not want to use; hence, you will need to glean only those questions you feel are appropriate. There is an extensive list of available laboratory manuals on Amusement Park Physics in the Appendix.
- (2) We have tried to stray away from a cook book approach where equations are given along with appropriate data. We feel solving problems in a plug-chug type of format is not problem solving. As a consequence, many questions are open-ended and your students may have to play engineer for a day. Students will have to be creative to obtain necessary data as well as know the appropriate equations to solve quantitative problems. Many of the pertinent data can be found in the Six Flags Great America Teachers Manual on Amusement Park Physics.

We encourage students to keep a journal or laboratory report. Possibly this report might contain a written description of the procedure used to collect the necessary data and then sample calculations showing pertinent equations with the correct units.

We recommend students estimate the mass of a typical rider to be between 60 - 70 kg. The mass for some of the roller coaster cars is listed below.

| <u>Ride</u>                | <u>Mass of One Car</u>                  |
|----------------------------|---|
| American Eagle             | 1,050 kg                                |
| BATMAN The Ride            | 485 kg                                  |
| Demon                      | 725 kg                                  |
| Iron Wolf                  | 500 kg                                  |
| Loggers Run/Yankee Clipper | 300 kg                                  |
| Raging Bull                | 1950 kg first car, 1225 kg rest of cars |
| Shock Wave                 | 725 kg                                  |
| Sky Trek Tower             | 357 kg (when full to capacity)          |
| Splashwater Falls          | 1730 kg                                 |
| Viper                      | 1,050 kg                                |
| Whizzer                    | 1,180 kg                                |